CLAIMS

What is Claimed is:

1. A system for acquiring blood-vessel data, comprising:

a data-gathering probe adapted to acquire blood-vessel data;

a heart-monitoring device adapted to acquire heartbeat data; and

a data-gathering device connected to said data-gathering probe and said heart-monitoring device and adapted to:

acquire said heartbeat data;

identify a cyclical portion of said heartbeat data, said cyclical portion being substantially common to multiple sets of heartbeat data; and

acquire said blood-vessel data during an interval substantially corresponding to said cyclical portion of said heartbeat data.

2. The system of Claim 1, further comprising a retraction device adapted to move said data-gathering probe through a blood vessel.

3. The system of Claim 1, further comprising a catheter, said data-gathering probe being attached to a distal end of said catheter.

4. The system of Claim 3, wherein said data-gathering probe comprises a plurality of transducers spaced circumferentially around said distal end of said catheter and adapted to receive at least said blood-vessel data.

5. The system of Claim 3, wherein said data-gathering probe further comprises at least one transducer adapted to rotate and receive at least said blood-vessel data.

6. The system of Claim 1, wherein said heart-monitoring device comprises an electrocardiograph (EKG) device.

7. The system of Claim 1, wherein said data-gathering device comprises a programmable computing device.

8. The system of Claim 1, wherein said data-gathering device comprises an intra-vascular ultrasound (IVUS) device.

9. The system of Claim 7, wherein said data-gathering device further comprises an intra-vascular ultrasound (IVUS) device.

10. The system of Claim 5, wherein said data-gathering device is further adapted to start acquiring said blood-vessel data when said at least one transducer is rotationally oriented in a predetermined position.

11. A system for acquiring blood-vessel data, comprising:

a computing device adapted to be electrically connected to a data-gathering probe and a heart-monitoring device; and

computer code operating on said computing device, said computer code being adapted to:

acquire heartbeat data from said heart-monitoring device; and

acquire blood-vessel data during an interval substantially corresponding to a cyclical portion of said heartbeat data, said cyclical portion being a commonly reoccurring portion of said heartbeat data.

12. The system of Claim 11, wherein said computing device is further adapted to be electrically connected to said data-gathering probe via an intra-vascular ultrasound (IVUS) device.

13. The system of Claim 11, wherein said computing device is further adapted to be electrically connected to a catheter having at least one transducer via an intra-vascular device.

14. The system of Clam 11, wherein said computing device is further adapted to be electrically connected to an electrocardiograph (EKG).

15. The system of Claim 13, wherein said computing device is further adapted to be electrically connected to a retraction device via said intra-vascular device, said retraction device being adapted to move said at least one transducer through a blood vessel.

16. The system of Claim 11, wherein said computer code is further adapted to transmit probe-triggering data during said interval, said probe-triggering data signifying a desire to acquire said blood-vessel data from said data-gathering probe.

17. The system of Claim 11, wherein said computer code is further adapted to identify a rotational orientation of at least one transducer, said data-gathering device comprising said at least one transducer.

18. The system of Claim 15, wherein said computer code is further adapted to identify a speed at which said retraction device is moving said at least one transducer probe through said blood-vessel.

19. A method of acquiring blood-vessel data from a patient, comprising:

inserting a data-gathering probe into a blood vessel of a patient;

electrically connecting said data-gathering probe to a data-gathering device;

attaching at least one heart-monitoring device to said patient;

electrically connecting said at least one heart-monitoring device to said data-gathering device;

acquiring heartbeat data from said at least one heart-monitoring device;

identifying a cyclical portion of said heartbeat data that is substantially common to more than one set of heartbeat data; and

acquiring blood-vessel data from said data-gathering probe during a time period that substantially corresponds to said cyclical portion of said heartbeat data.

20. The method of Claim 19, further comprising the step of moving said data-gathering probe through said blood vessel at a substantially steady speed.

21. The method of Claim 19, wherein said step of inserting a data-gathering probe into a blood vessel further comprises inserting a catheter into said blood vessel

22. The method of Claim 21, wherein said step of electrically connecting said data-gathering probe to a data-gathering device further comprises electrically connecting said catheter to an intra-vascular ultrasound (IVUS) device.

23. The method of Claim 22, wherein said step of attaching at least one heart-monitoring device further comprises attaching an electrocardiograph (EKG) device to said patient.

24. The method of Claim 23, wherein said step of electrically connecting said at least one heart-monitoring device to said data-gathering device further comprises electrically connecting said EKG device to a computing device electrically connected to said IVUS device.

25. The method of Claim 19, wherein said step of acquiring blood-vessel data further comprises receiving blood-vessel data from said data-gathering probe during said interval.

26. The method of Claim 19, wherein said step of acquiring blood-vessel data further comprises continuously receiving blood-vessel data from said data-gathering probe and storing said blood-vessel data during said interval.

27. The method of Claim 19, wherein said step of acquiring blood-vessel data further comprises transmitting probe-trigger data at the beginning of said interval and receiving blood-vessel data from said data-gathering probe in response thereto.

28. The method of Claim 19, further comprising the step of rotating at least a portion of said data-gathering probe during the acquisition of said blood-vessel data.

29. The method of Claim 28, wherein said step of acquiring blood-vessel data further comprises transmitting probe-triggering data at the beginning of said interval and receiving blood-vessel data from said data-gathering probe in response thereto.

30. The method of Claim 28, wherein said step of acquiring blood-vessel data further comprises acquiring blood-vessel data during said interval and when said at least a portion of said data-gathering probe is rotationally oriented in a predetermined position.

31. A method of acquiring blood-vessel data, comprising;

inserting a data-gathering probe into a blood vessel of a patient;

electrically connecting said data-gathering probe to a data-gathering device;

attaching at least one heart-monitoring device to said patient;

electrically connecting said at least one heart-monitoring device to said data-gathering device;

acquiring multiple sets of heartbeat data from said at least one heart-monitoring device;

identifying cyclical portions of said multiple sets of heartbeat data;

substantially synchronizing the acquisition of multiple sets of blood-vessel data to cyclical portions of said multiple sets of heartbeat data.

32. The method of Claim 31, wherein said step of inserting a data-gathering probe further comprises inserting a catheter having at least one transducer into said blood vessel of said patient.

33. The method of Claim 31, wherein said step of electrically connecting said data-gathering probe to a data-gathering device further comprises electrically connecting a catheter having at least one transducer to an intra-vascular ultrasound (IVUS) device.

34. The method of Claim 31, wherein said step of electrically connecting said at least one heart-monitoring device to said data-gathering device further comprises electrically connecting at least one electrocardiograph (EKG) to a computing device, said computing device further being electrically connected to an intra-vascular ultrasound (IVUS) device.

35. The method of Claim 32, further comprising the step of identifying a rotational orientation of said at least one transducer.

36. The method of Claim 35, wherein said step of substantially synchronizing the acquisition of multiple sets of blood-vessel data to cyclical portions of said multiple sets of heartbeat data further comprises commencing the acquisition of each set of blood-vessel data when said transducer is rotationally oriented in a particular position.

37. The method of Claim 31, further comprising tracking the movement of said data-gathering probe through said blood vessel.

38. The method of Claim 37, wherein said step of tracking the movement of said data-gathering probe further comprises electrically connecting said data-gathering device to a retraction device adapted to move said data-gathering probe through said blood-vessel at a substantially steady speed.

39. A method for gated acquisition of intra-vascular ultrasound (IVUS) data, comprising the steps of:

monitoring a physiological signal of a patient, where the physiological signal correlates with the cardiac cycle;

advancing an IVUS catheter to a region of interest within a coronary artery;

initiating a pullback of the catheter; and

acquiring data when the catheter reaches a particular point in the cardiac cycle.

40. The method of Claim 39, wherein said IVUS catheter further comprises a rotating transducer.

41. The method of Claim 39, wherein said IVUS catheter further comprises an array of transducers.